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Sent: Thursday, May 8, 2025 7:33 PM
To: NEM Reform <NEMReform@aemo.com.au>
Subject: ISF and IPRR Consultation of Constraint Formulation Guidelines Objection Submission

ISF and IPRR Consultation of Constraint Formulation Guidelines Objection Submission

Please accept our submission.

I apologise for the failure to meet the 5 p.m deadline today, however it's extremely inappropriate & overwhelming that the Regulator would ensure so many submissions are overwhelming the public all at once - with at least five submissions due today.

It is seriously detrimental if our submission is not included as the Regulator's complicated plans are causing our community severe hardship, deprivation & austerity as electricity unnecessarily becomes increasingly unreliable & insecure without Coal power, & AEMO's 'renewable' electricity prices & the consequential Cost of Living Crisis continues skyrocketing unaffordably.

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AEMO's ISF and IPRR Consultation of Constraint Formulation Guidelines and Dispatch Practices Objection Submission

Executive Summary

This submission raises serious concerns about the Australian Energy Market Operator's (AEMO's) evolving use of constraint equations in the National Electricity Market (NEM).

While AEMO asserts these constraints serve system security and co-optimisation objectives, a critical analysis reveals a pattern of discretionary engineering, opaque formulation, market distortion, and centralised intervention—all of which undermine the National Electricity Objective (NEO).

These constraint practices are not neutral technical tools. They increasingly reflect a top-down ideological reshaping of the market to privilege intermittent, non-synchronous generation at the expense of system resilience, transparency, and competition.

1. <u>Systemic Overreach through Discretionary Constraints and Automation</u>

AEMO's increasing use of discretionary, quick, and automated constraint equations undermines the integrity of a rules-based dispatch system:

Quick Constraints and Constraint Automation allow on-the-fly engineering without prior market notice, consultation, or auditability.

While ostensibly necessary for rare or emergent scenarios, their regularisation represents a fundamental shift to operator-led dispatch—a shift that violates the spirit of open-market design.

These tools also sidestep the rigorous, co-optimised formulation principles AEMO claims to follow elsewhere.

This creates a parallel, discretionary pathway for constraint application, which risks bias and inconsistency.

Combined with the non-public nature of many of these rapid constraints, this system cultivates informational asymmetry in the market, undermining price signals and investor confidence.

2. <u>Alternative Formulations and Rule-Bending Flexibility</u>

AEMO's justification for alternative formulations—documented in section 7—is troubling:

AEMO has the power to define when a constraint is "too complex" or when a fully co-optimised model cannot be used.

These alternative formulations are published after implementation, not before.

This inverts the principle of regulatory accountability, where justification should precede action.

Although AEMO promises post-hoc consultation, this is rendered meaningless once market prices and dispatch outcomes have been irrevocably affected.

3. Technocratic Control of Inertia and Security Services

3.1. Inertia and Security Service Constraints: Binary Oversimplification

The use of binary on/off plant status (1 or 0) to represent inertia and system strength contributions—rather than dynamic capability or machine-specific characteristics—is a technically crude approach:

It assumes that the mere presence of a unit online equates to sufficient contribution, ignoring variations in inertia by output level, rotor speed, or mode of operation.

This simplification makes it easier to model and enforce arbitrary targets, but it does so at the cost of engineering fidelity and dispatch realism.

3.2. Grouping Identifiers: Constructed Compliance

The introduction of Group Identifiers (section 6.4.2) effectively allows AEMO to set pre-approved configurations of assets that "satisfy" security requirements—even if those configurations are neither optimal nor cost-effective.

This modular approach risks turning security constraints into regulatory checklists rather than genuine stability metrics.

It allows AEMO to:

Declare system security "satisfied" even when alternative combinations might be cheaper or more reliable.

Create groupings that entrench preferred units or technologies under the guise of resilience.

4. Market and Security Distortions via Constraint Manipulation

4.1. Use of Soft and Hard Ramping Constraints

While AEMO's application of soft and hard ramping constraints aims to prevent price shocks and flow instability, this introduces artificial smoothing that can:

Delay legitimate market responses;

Hide underlying stress or risk on the network;

Create false security by diffusing real-time price signals.

Moreover, soft constraints—given lower CVPs—can be more easily relaxed, resulting in hidden over-constrained dispatch outcomes and price spikes, particularly in weak or islanded regions.

4.2. Suppression of FCAS and Generator Risk Reallocation

Sections 5.6 through 5.9 outline practices that exclude generators from providing FCAS not based on measured capability, but on projected risk of separation or disconnection.

This:

Removes legitimate competition from the FCAS market;

Leads to under-procurement or overpricing of FCAS;

Is enforced in an opaque, discretionary manner (e.g., "on a case-by-case basis" in 5.9).

This introduces a critical distortion: security is enforced through preclusion rather than inclusion, shrinking the available services pool arbitrarily and unnecessarily.

5. Political Engineering vs. Power Engineering

The evolving constraint regime is fundamentally aligned with political goals of accelerating variable renewable energy (VRE) uptake and de-risking their participation.

However:

FCAS, inertia, and contingency constraints are being used as backdoor levers to reshape dispatch and dispatchability.

The exclusion of thermal, synchronous, and legacy plant from participation is driven more by narrative than need.

The Basslink No-Go zone, for instance, illustrates how physical limitations are treated with absolute exclusion rather than nuanced modelling of dynamic capability.

6. Transparency and Market Integrity at Risk

The constraint formulation and invocation processes lack sufficient external visibility, accountability, or appeal mechanisms:

Participants are only informed after constraints are applied;

Key variables like CVP values, RHS relaxation, and scaling decisions are not always published or explained;

The application of unit zero constraints effectively removes generators from the market with no recourse.

This places AEMO in the role of market-maker, not just system operator—an inappropriate function for a non-commercial regulator.

Conclusion and Recommendations

AEMO's Constraint Formulation Guidelines and associated operational practices reveal a technocratic and ideologically driven transformation of the NEM.

Rather than preserving neutrality and engineering discipline, the current system:

Inserts bias, distorts price signals, and undermines competitive neutrality;

Relies on opaque formulations, discretionary enforcement, and binary simplifications;

Is poorly aligned with the physical dynamics of the power system it purports to secure.

Recommendations:

Full public disclosure of all discretionary and automated constraints, including justifications and performance metrics.

Pre-implementation consultation for alternative formulations—not post-hoc publication.

Independent audit of inertia and FCAS constraints to validate modelling assumptions and treatment of generation risks.

Review and revision of quick constraint and discretionary constraint powers to restore rule-based, transparent operations.

A refocus on engineering principles over political imperatives, ensuring system security is managed with real inertia, real dispatchability, and real cost transparency.

Response to AEMO's Consultation Questions

1. Comments, Feedback or Unidentified Consequences from the Proposed Security Service Constraints

Yes. There are several serious concerns and potential unintended consequences stemming from AEMO's proposed Security Service constraints:

Binary plant status oversimplifies generator capability:

By relying on a 1/0 "on/off" status and fixed inertia coefficients, the model ignores partial operation, ramping capacity, and dynamic modes of synchronous condensers. This treats vastly different plants as interchangeable units, when in reality their contribution to system strength or inertia can vary dramatically.

Group Identifier logic introduces rigidity and gaming risk: The requirement that at least one grouping of constraints be satisfied risks creating non-optimal dispatch outcomes where assets are dispatched not based on performance or price, but on pre-defined groupings.

This removes flexibility from the market and may entrench politically favourable combinations at the expense of cost efficiency.

Reduces competition and co-optimisation:

These constraints are non-price based, and thus operate outside NEMDE's co-optimised logic.

This inherently suppresses competition from other providers who may be technically capable of delivering inertia or strength, but who do not fit the predefined group or have been excluded via 1/0 simplifications.

Enables centralised procurement via proxy dispatch constraints:

Rather than using transparent, competitive procurement for system strength or inertia, these constraints hardwire service requirements into dispatch, effectively mandating certain generator configurations.

This is procurement by equation, not by market.

Unintended market exclusion of new technologies:

Emerging technologies like grid-forming inverters or hybrid synchronous/virtual machines may be structurally excluded from these equations because they do not conform to the simplistic "synchronous condenser = X MW.s" logic.

In summary, these constraints risk entrenching a static, narrow view of power system security—favouring certain technologies and configurations while undermining innovation, cost-efficiency, and engineering realism.

2. <u>Feedback or Concerns on AEMO's Application of LHS Coefficient Thresholds</u>

Yes. AEMO's current methodology for selecting and applying LHS coefficient thresholds raises multiple concerns:

Opaque methodology:

AEMO has not clearly disclosed the basis on which coefficient thresholds are chosen or excluded.

Stakeholders are unable to verify the reasonableness, consistency, or neutrality of these decisions.

This creates asymmetric information and increases the potential for bias in constraint formulation.

Non-dispatchable terms remain on RHS inconsistently:

The selective placement of coefficients on the LHS vs. RHS may appear to follow the guideline rules, but there are numerous cases where non-dispatchable terms appear to be retained on the LHS or are inconsistently applied.

This introduces the risk of hidden system conditions being represented as active dispatch variables, distorting price formation.

Impacts co-optimisation and market efficiency:

Improper use or omission of LHS coefficients means dispatchable resources are not fully engaged in the constraint's resolution.

This degrades the efficiency of NEMDE's co-optimisation engine and can lead to non-competitive, over-constrained dispatch.

Selective inclusion favours certain participants:

Where thresholds are chosen to exclude low-capacity units or aggregate multiple small participants into a passive term, the result is an **implicit favouring of larger, legacy synchronous assets, often without price justification.**

Lack of adaptive thresholds:

Coefficients are treated as static, yet generator capabilities and system strength vary dynamically with network conditions.

Without adaptive thresholds, the constraint equations become blunt instruments rather than responsive tools.

Recommendation:

AEMO should publish a clear, externally reviewable methodology for LHS coefficient threshold selection, including real-time or historical examples, rationale for cut-offs, and impacts on dispatch and pricing.

Stakeholders should have visibility and recourse where thresholds result in demonstrable disadvantage or distortion.

Yours Sincerely,

Lynette LaBlack - 'Save Our Surroundings Riverina'

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